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Keener et al.

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(54) **GENERATION OF MICROBIOCIDES INSIDE A PACKAGE UTILIZING A CONTROLLED GAS COMPOSITION**

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(58) **Field of Classification Search**

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See application file for complete search history.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

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204/164

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* cited by examiner

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(51) **Int. Cl.**

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(57) **ABSTRACT**

An apparatus and method of producing an atmospheric non-equilibrium plasma (ANEP) in a sealed container having a selected working gas and an object to be treated is described. A variety of working gas mixtures including air, O₂, N₂, CO₂, He and Ar, in combination with a range of ionization gradients, voltages and ANEP column lengths was investigated so as to establish effective ranges of the variables using the sterilization of a sample as a measure of effectiveness. Certain combinations of working gas, voltage gradient, voltage or ANEP column length were found to have greater effectiveness. The approach may be used for food products, medical equipment, or other objects where treatment with reactive gas atmospheres is effective.

18 Claims, 6 Drawing Sheets

